REMARKS

Reconsideration of the application in view of the following remarks is respectfully requested.

Examiner states, IN ERROR, that "Merrill teaches that the dark current is less than the offset signal". The exact quote is

"To generate a reference dark frame, the reset switch and the transfer switch connecting the photodiode to the capacitor are clocked in rapid succession so that there is no time for photocurrent to accumulate, generating a reference frame that can be subtracted from the image frame at a later time when both frames have been stored on the host system."

Since Merrill is *silent* on the subject of dark current, Examiner must read into the above statement that the dark current is less than the light current. This may, *or may not*, be true. Merrill, however, *never* said it.

Thomas, in the section quoted by Examiner, says

"Referring to FIG. 1, an imaging device is illustrated which compensates for dark current experienced during an array transfer operation. The imaging device 100 includes an array of photo sensitive cells, or pixels 102, such as photodiodes, a compensation circuit 106 for reducing error experienced by the photo sensitive cells, and a control circuit 104 to control operation of the imaging device and data transfer from the array. An optional processing circuit 105 can be provided to process and/or store data transferred from the array. Likewise, output signals from the compensation circuit can be output from the imaging device for external processing.

As explained above, the photo sensitive array 102 captures a light image which is exposed to the array. The array includes numerous rows and columns of photo sensitive cells, or pixels, which experience leakage (dark) currents. *Because a variable time differential is experienced between exposing the array to a light source and transferring pixel charges from the array, a variable*

(increasing) dark current build-up is experienced which induces error in the charge stored on the pixels. As known to those skilled in the art, the dark current is a function of device temperature and integration time. That is, both environmental and operational variables change the effect of the dark current.

In one embodiment of the imaging device, a compensation circuit 106 is provided which compensates for dark current changes over an array transfer operation. Prior to describing the transfer circuit, array 102 is described in more detail. Referring to FIG. 2, one embodiment of array 102 is illustrated. The array includes a matrix of photo sensitive pixels 107 which are arranged in numerous rows and columns. The array includes an active area 108 which is exposed to light during operation of the imaging device. Photo sensitive elements 107 can be any type of solid-state photo sensitive device, such as, but not limited to, complementary metal oxide semiconductor (CMOS) photodiodes. An optically dark region 110 is provided adjacent to the array and includes a plurality of rows of photo sensitive pixels. It will be appreciated by those skilled in the art, with the benefit of the present disclosure, that optically dark region 110 can be located on either, or both, sides of active region 108. Only one region 110 is required for the present invention.

A difference between optically dark region 110 and active region 108 is that photo sensitive pixels located in the optically dark region are shielded from incident light. This can be accomplished by fabricating a layer of metal, such as aluminum, over the pixels. A second optically dark region 112 is located on one edge of the array and includes a plurality of columns of photo sensitive pixels. An optional optically dark region 114 can be located on an opposite edge of the array and includes a plurality of columns of pixels. During a read operation from the array, a charge is serially read from each row. For example, array 102 can be read by first read a charge from a pixel 107 located at an upper right corner of array 102 (row 150(a), column 111 (a)), and then serially reading a charge from pixels located in row 150(a) until column 111 (n) is reached. Data from a subsequent row is then read following the same process until data from row 150(n) has been read. Although the above described transfer operation shifts charges from left to

right, data can be read from the array from right to left, top to bottom, bottom to top, or mixed. As described below, regardless of the transfer scheme selected, data is read from optically dark region 110 prior to reading data from active area 108."

Applicant respectfully requests, in light of the above italicized statement, that Examiner explain and support the statement. "Examiner disagrees, by teaching capturing both, the image and the dark image at the same time (...) Thomas teaches measuring cark current at the same time the array is receiving the image, since the process of measuring dark current starts at the time the image sensor is receiving image signal, which is the same time the dark current is also received by the optical dark region."

Until Examiner can offer more support in the prior art documents cited, Applicant holds to his position that the dark current of Thomas is not measured during the time the array is receiving light. Applicant would agree that, probably, there is dark current recorded in the time that the light is on , but there is no indication whatsoever that the dark current measured during the light phase is not negligible with respect to the dark current measured during the transfer time.

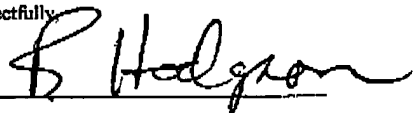
No additional fee is required.

On the basis of the above amendments and remarks, reconsideration of this application and its early allowance is respectfully requested.

CERTIFICATE OF FACSIMILE TRANSMISSION UNDER 37 CFR 1.8(a) and (b), 37CFR 1.86(f)-

I hereby certify that the following attached correspondence comprising Response is being sent by facsimile transmission to Commissioner of Patents ,Alexandria, VA 22313-1450 FAX NUMBER 571-273-8300 on May 22, 2006

Respectfully,



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